

Treasure Valley Idaho Severe Convection

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An outbreak of severe convection moved across the Treasure Valley of Idaho on May 30th, 2003.♦ This area typically sees little severe convection and, when it does occur, is often in the form of microburst wind events from high based convection.♦ This event, however, contained many supercell-type storms in a strongly sheared environment.♦ Due to the sparse population in much of the area, the reports of severe weather were limited.

A compact and strong short-wave trough evident on water vapor imagery was over central Oregon on the morning of May 30th.♦ With convection already occurring near 12 UTC (or 6 am MDT).

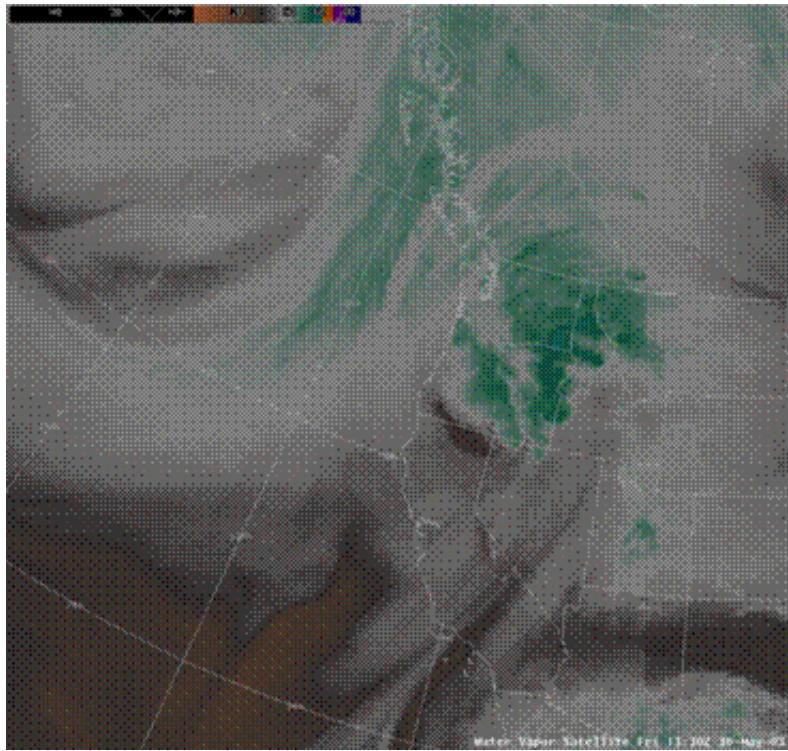


Fig 1. Water Vapor Image at 1330 UTC May 30 2003

An important aspect of this event is the strong wind shear available in the storm environment.♦ The 3-hr forecast of 0-6km shear from the 12 UTC run of the Eta model shows a large area of over 60 knots of shear over, and just south of, the CWA at 15 UTC.

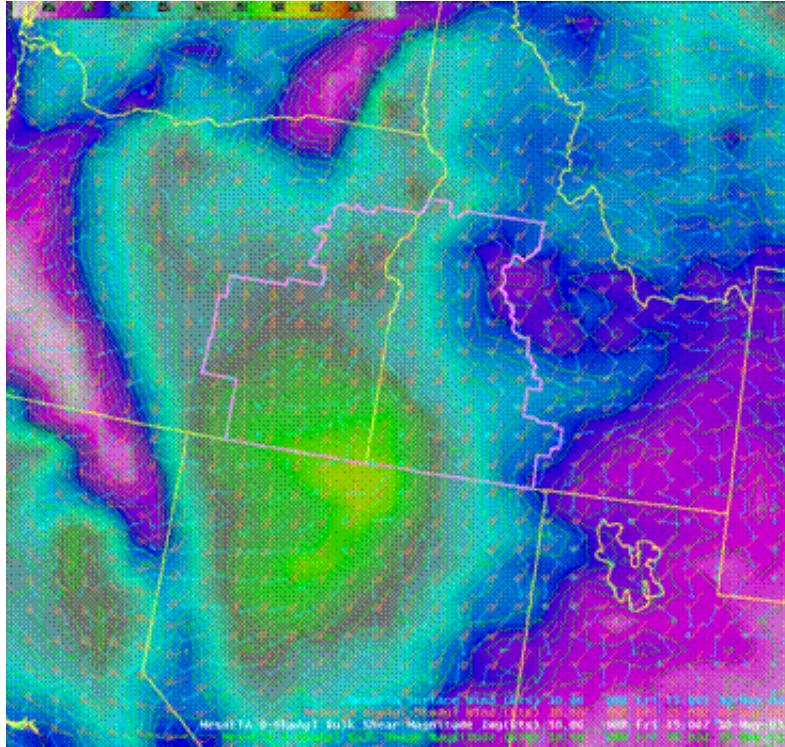


Fig 2.♦ 3-hour Eta forecast of 0-6km Shear valid at 15 UTC May 30, 2003.

This area of strong shear is forecast to continue through the day, as the shortwave trough over Oregon lifts out to the northeast.♦ The Forecast 0-6km shear for 18 UTC and 21 UTC continues to show large areas of more than 60 knots of shear continuing through the afternoon.

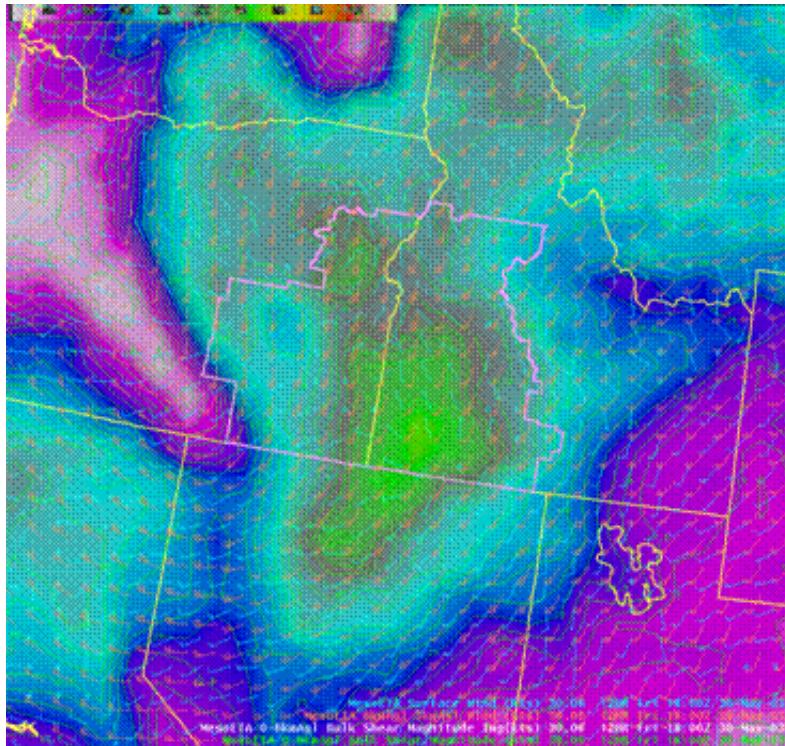


Fig 3. 6-hour Eta forecast of 0-6km shear valid at 18 UTC May 30, 2003.

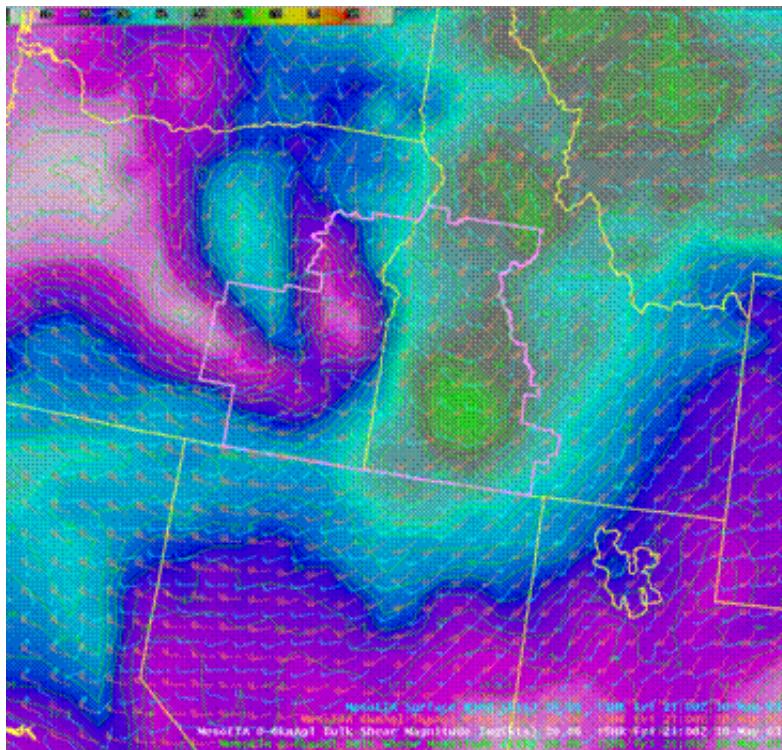


Fig 4. 9-hour Eta forecast of 0-6km shear valid at 21 UTC May 30, 2003.

The Eta forecast sounding for Boise (BOI) at 21 UTC shows strong instability with over 2600 J/kg of CAPE and over 1.2 inches of precipitable water.

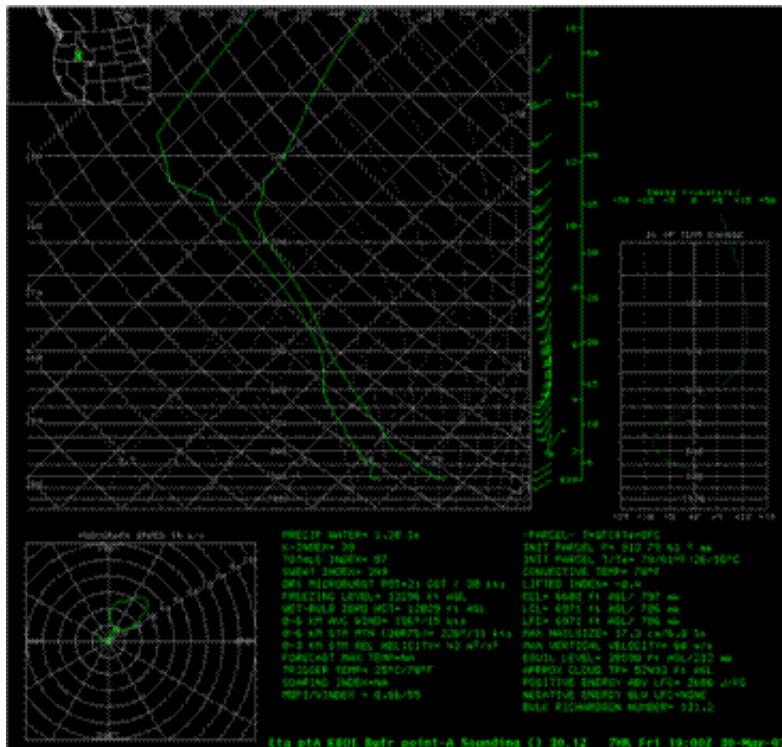


Fig 5. 7-hr Eta forecast sounding for Boise valid at 19 UTC May 30, 2003.

The storms organized into several ♦waves♦ of activity, with each wave containing several large cells displaying supercell characteristics.♦ Here a composite reflectivity image from the Boise radar (KCBX) shows the first wave entering the state of Idaho at 1348 UTC.

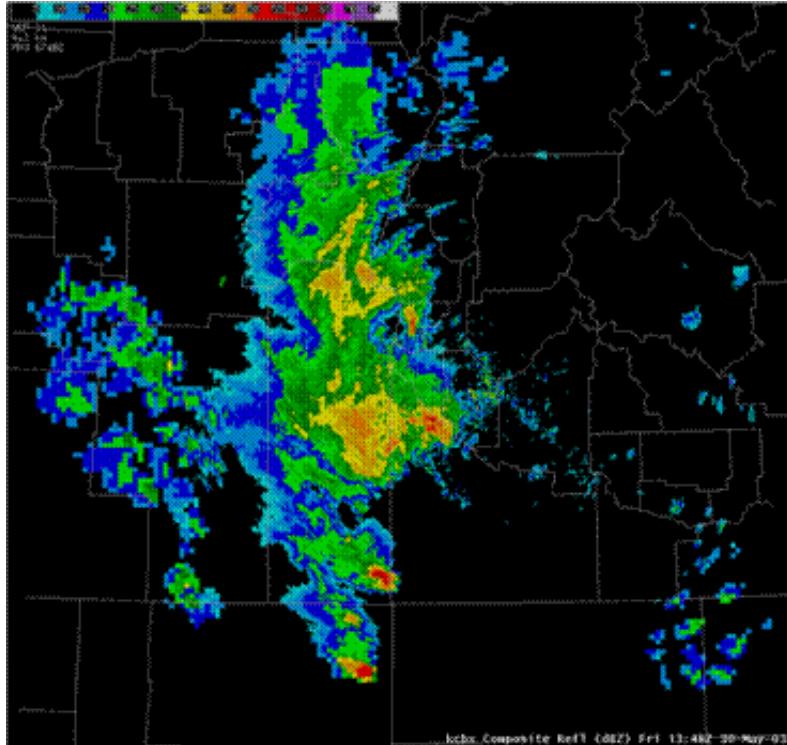


Fig 6. KCBX Composite Reflectivity image at 1348 UTC May 30, 2003.

Radar coverage and overlap is small across much of the West, so forecasters have to use multiple data sources to keep a good awareness of the overall situation. ♦ In particular, the KCBX radar display above makes it appear that this first wave of storms is the only current problem. ♦ However the second wave of storms further to the west are nearly as intense. ♦ The display from the Elko radar (KLRX) shows that the second wave already has a storm nearly as intense as those in the first wave further to the east.

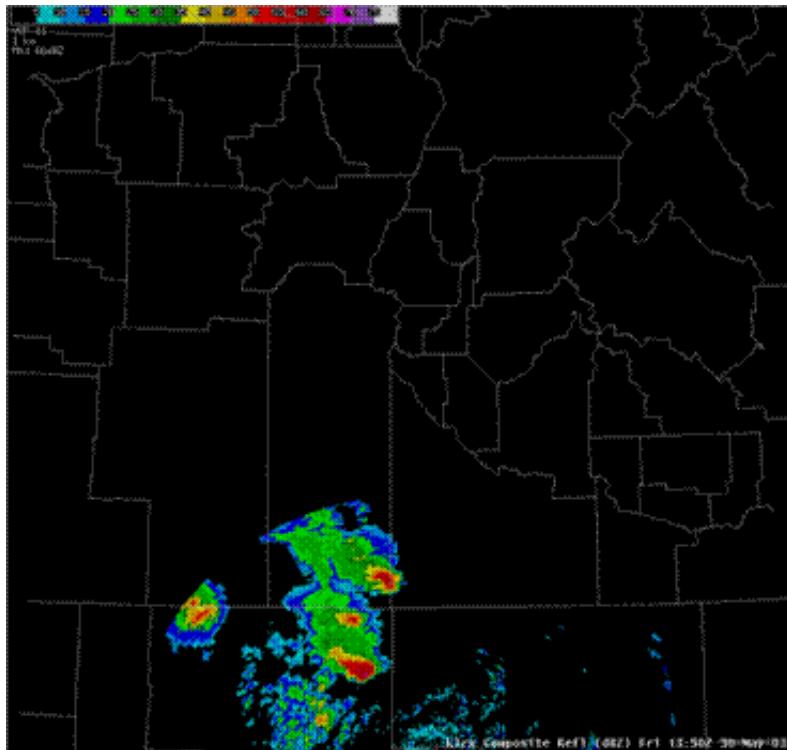


Fig 7. KLRX Composite Reflectivity image at 1350 UTC 30 May, 2003.

Each wave contained several cells which displayed supercell characteristics. ♦ Here a 4-panel

display of Reflectivity for the lowest 4 elevation angles is shown for one of the cells south of Boise at 1520 UTC. ♦ This cell has a strong tilt, with highest reflectivities at upper elevation angles overlying weak reflectivities at the lowest angle (use the TVS symbol to geographically compare the four elevation angles). ♦ The mesocyclone detection algorithm detected a mesocyclone on this cell for over two hours, with occasional TVS alarms as it progressed eastward.

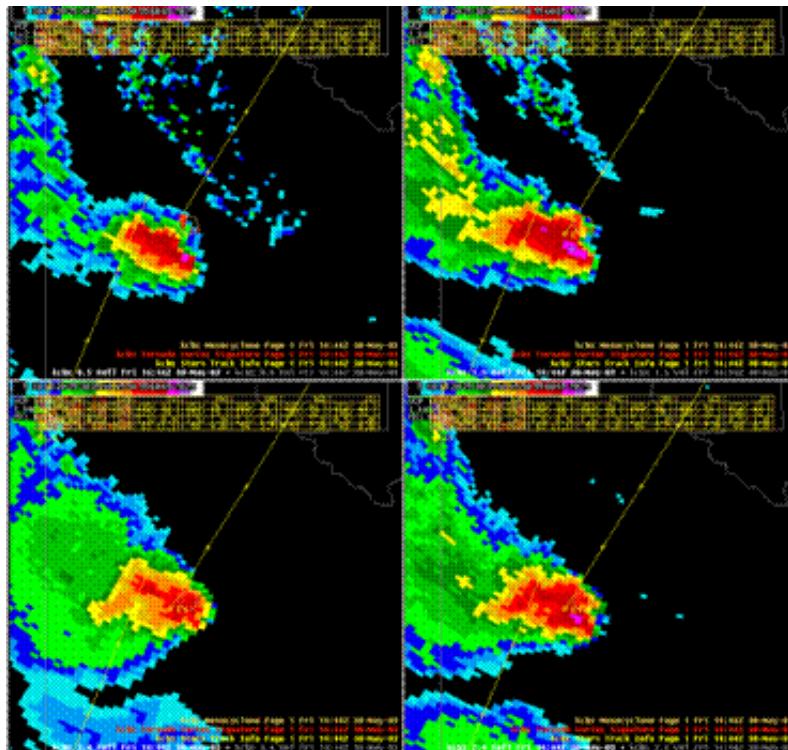


Fig 8. KCBX 4-panel reflectivity image at 1444 UTC May 30, 2003.

The corresponding 4-panel velocity image shows several areas of actual rotation, as well as strong low-level convergence into the lower levels of the cell.

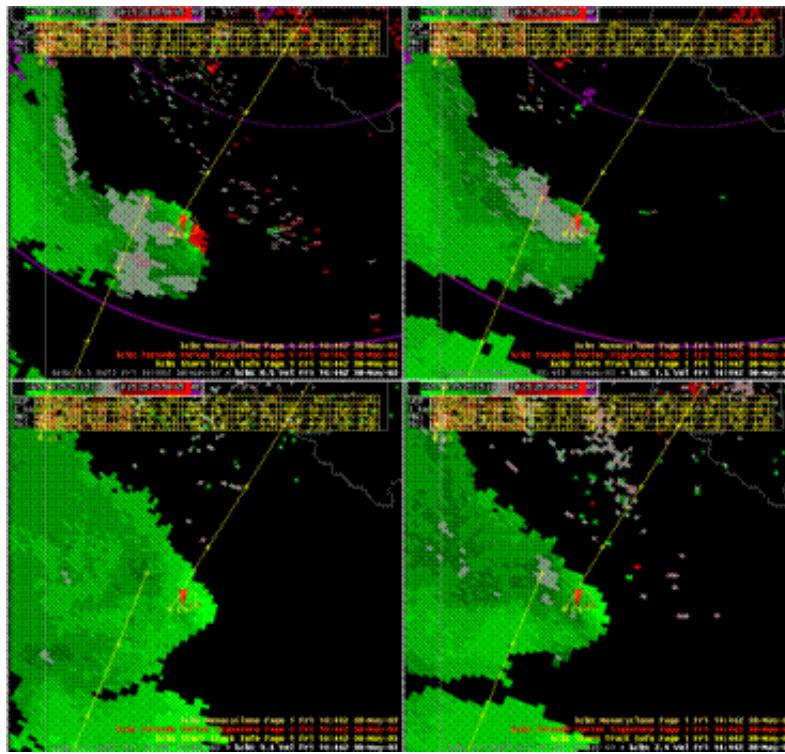


Fig 9. KCBX 4-panel velocity image at 1444 UTC May 30, 2003.

When viewed in a storm-relative sense, the rotation is even more pronounced, and evident through a deep layer.

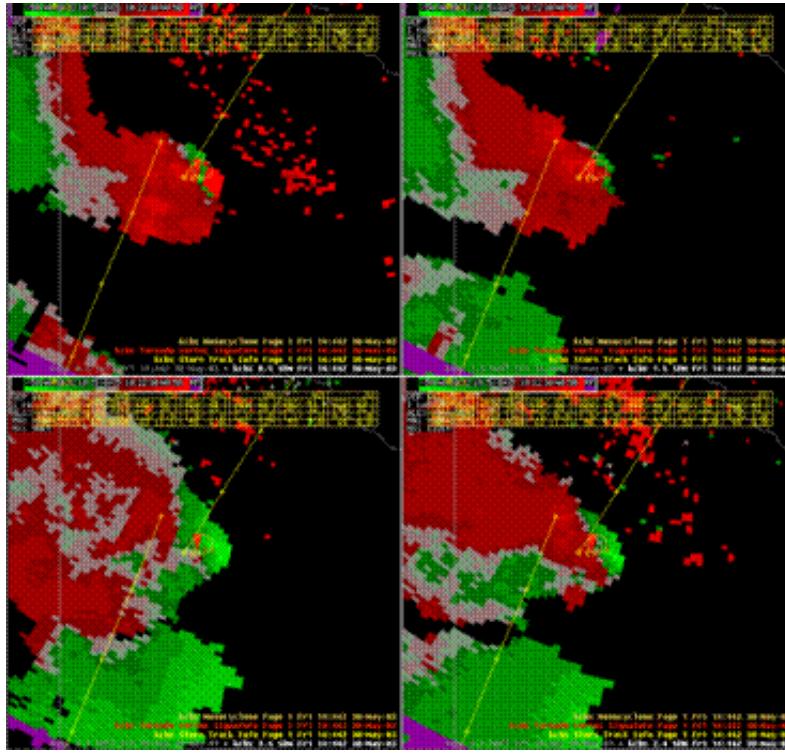


Fig 10.♦ KCBX 4-panel storm-relative velocity image at 1444 UTC May 30, 2003.

This cell produced brief flash flooding in the Owyhee mountain foothills near Oreana at 1530 UTC, as well as wind gusts to 60 mph along Interstate 84 southeast of Boise at 1600 UTC.

An important aspect of this event is recognizing that several waves of activity will continue to

move across the CWA during the day.♦ Six hours later, four-panel displays for another cell in nearly the same area as the cell shown above show similar characteristics of strong and deep rotation (although the cell tilt is not as pronounced).

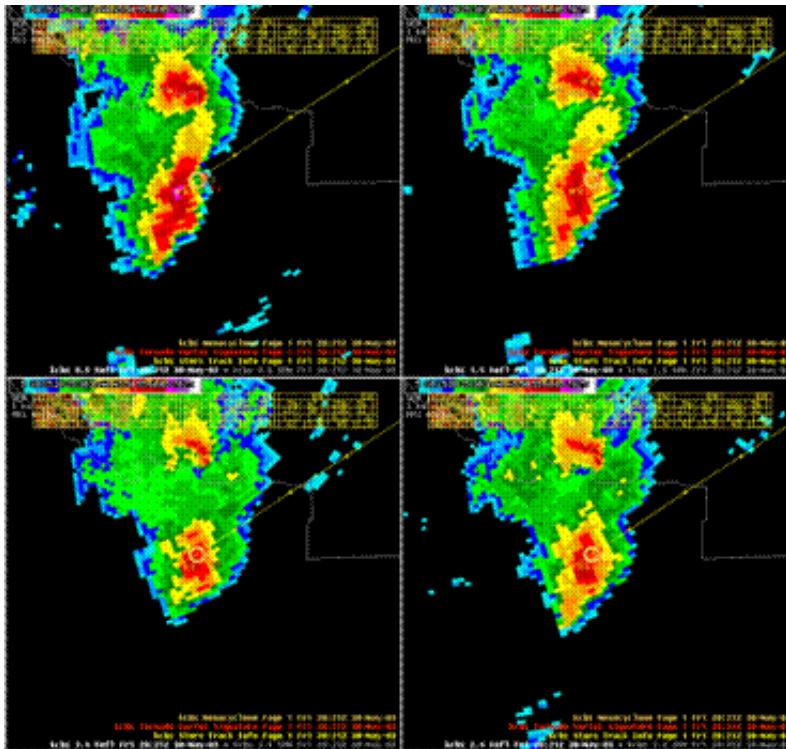


Fig 11.♦ KCBX 4-panel reflectivity image at 2021 UTC May 30, 2003.

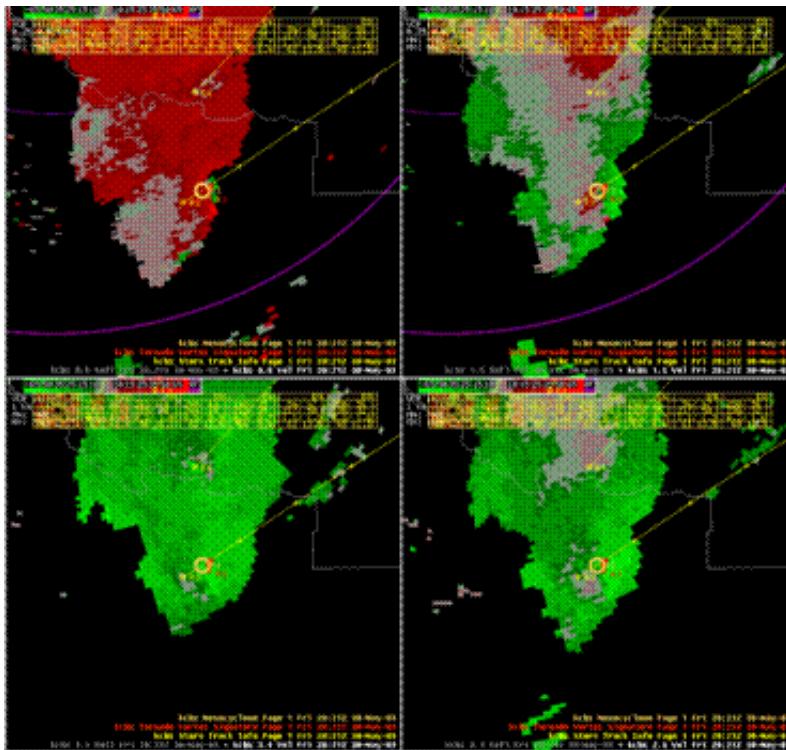


Fig 12.♦ KCBX 4-panel velocity image at 2021 UTC May 30, 2003.

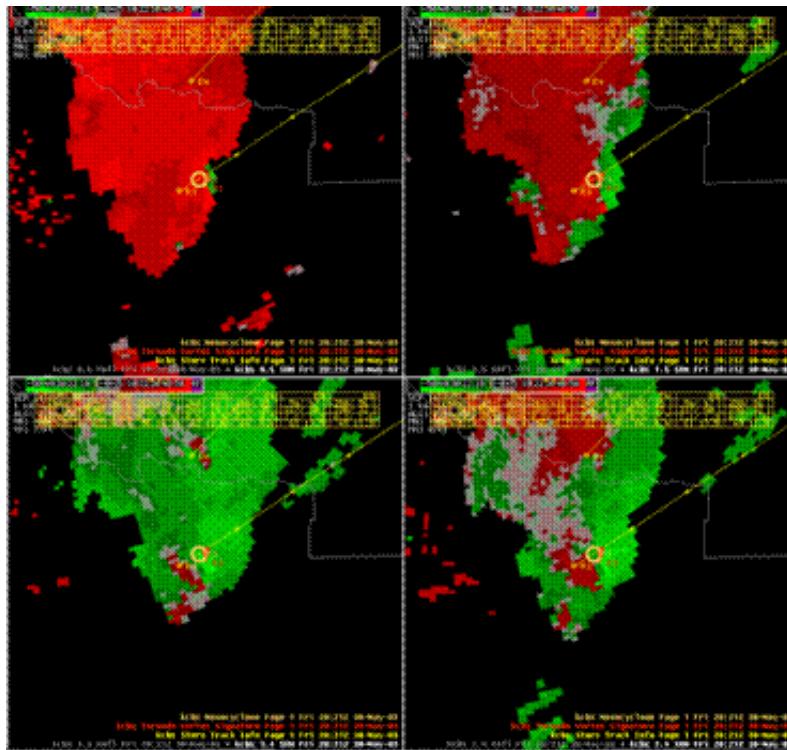


Fig 13.♦ KCBX 4-panel storm-relative velocity image at 2021 UTC May 30, 2003.

This cell produced one inch diameter hail in the Bruneau area around 2030 UTC.

Conclusion

This case provides a good example of supercell storms in the Treasure Valley of Idaho.♦ Several waves of storms over an eight hour period test the forecasters ability to maintain situational awareness and a good watch of all storms across the CWA.♦ The sparse population of southern Idaho makes actual severe weather reports with these storms quite limited.